

इंटरनेट

मानक

Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

“जानने का अधिकार, जीने का अधिकार”

Mazdoor Kisan Shakti Sangathan

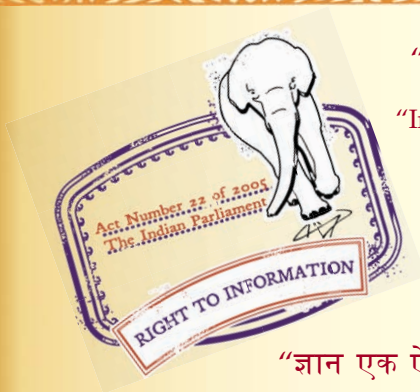
“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 8457 (1977): Tyre pressure gauges for automobiles
(Pocket type) [ETD 18: Industrial Process Measurement and Control]



“ज्ञान से एक नये भारत का निर्माण”

Satyanarayan Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

BLANK PAGE



IS : 8457 - 1977

Indian Standard
**SPECIFICATION FOR
TYRE PRESSURE GAUGES FOR
AUTOMOBILES (POCKET TYPE)**

UDC 629.113.012.55 : 531.787.4



© Copyright 1977

INDIAN STANDARDS INSTITUTION
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Price Rs 5⁰⁰ Gr 2

August 1977

Indian Standard

SPECIFICATION FOR TYRE PRESSURE GAUGES FOR AUTOMOBILES (POCKET TYPE)

Industrial Instruments Sectional Committee, EDC 60

Chairman

SHRI H. C. VERMA

Representing

Associated Instrument Manufacturers (India)
Private Limited, New Delhi; and All India
Instrument Manufacturers & Dealers Association, Bombay

Members

SHRI C. D. AMUDACHARI	The Fertilizer Corporation of India Ltd, Sindri
SHRI K. P. CHATTERJEE (<i>Alternate</i>)	
SHRI V. K. BASSI	Hindustan Paper Corporation Limited, New Delhi
SHRI K. BHASKARAN	Bharat Heavy Electricals Limited, New Delhi
SHRI A. K. BHATTACHARYYA	National Test House, Calcutta
SHRI S. BISWAS	Mahindra & Mahindra Ltd, Calcutta
SHRI P. CHAKRAPANI	Association of Indian Engineering Industry, New Delhi
SHRI S. LALL (<i>Alternate</i>)	
SHRI M. K. DASGUPTA	National Physical Laboratory (CSIR), New Delhi
SHRI K. D. BAVEJA (<i>Alternate</i>)	
SHRI A. S. DHILLON	The Tata Iron and Steel Company Limited, Jamshedpur
DIRECTOR	Central Scientific Instruments Organisation (CSIR), Chandigarh
SHRI S. K. PYNE (<i>Alternate</i>)	
SHRI R. GOPALAKRISHNAN	Engineers India Limited, New Delhi
SHRI B. SHANKARANARAYAN (<i>Alternate</i>)	
SHRI K. N. RAMASWAMY	Directorate General of Technical Development, New Delhi
SHRI RAMDAS KISSENDAS	Indian Petrochemicals Corporation Limited, Vadodara
SHRI A. N. RAO	Hindustan Steel Ltd, Rourkela
SHRI K. S. BHAGAWAN (<i>Alternate</i>)	
SCIENTIFIC ADVISER TO THE	Naval Headquarters
CHIEF OF THE NAVAL STAFF	
SHRI HARBIR SINGH (<i>Alternate</i>)	
SHRI N. R. SRINIVASAN	Indian Oil Corporation Limited, New Delhi
SHRI S. B. MATHURE (<i>Alternate</i>)	

(Continued on page 2)

© Copyright 1977

INDIAN STANDARDS INSTITUTION

This publication is protected under the *Indian Copyright Act* (XIV of 1957) and reproduction in whole or in part by any means except with written permission of the publisher shall be deemed to be an infringement of copyright under the said Act.

(Continued from page 1)

<i>Members</i>	<i>Representing</i>
BRIG D. SWAROOP	Instrumentation Limited, Kota
SHRI K. R. BANERJEE (<i>Alternate</i>)	
SHRI B. V. TOLANI	Bajaj Electricals Limited, Pune
SHRI L. J. JOSHI (<i>Alternate</i>)	
SHRI M. G. TOSHNIWAL	Toshniwal Industries Pvt Ltd, Bombay
SHRI S. C. MAHESHWARI (<i>Alternate</i>)	
SHRI G. H. VAZE	Bhabha Atomic Research Centre, Bombay
DR P. K. PATWARDHAN (<i>Alternate</i>)	
SHRI S. CHANDRASEKHARAN,	Director General, ISI (<i>Ex-officio Member</i>)
Deputy Director (Mech Engg)	

Secretary

SHRI S. P. ARBEY
Deputy Director (Mech Engg), ISI

Pressure Gauges and Vacuum Gauges Subcommittee, EDC 60 : 2

ASSISTANT DIRECTOR STANDARDS (SPECIFICATION)	Research, Designs & Standards Organization (Ministry of Railways), Lucknow
SHRI G. BALARAM	Indian Oil Corporation Limited, New Delhi
SHRI A. G. SAVANT (<i>Alternate</i>)	
SHRI K. C. BODIWALA	Optimohar Industries (Pvt) Ltd, Bombay
SHRI D. K. GARG	The Industrial Electrodes and Gauges Ltd, Calcutta
SHRI S. C. JAIN (<i>Alternate</i>)	
SHRI A. GHOSH	National Test House, Calcutta
SHRI S. N. MITRA	National Instruments Ltd, Calcutta
SHRI S. MAJUMDAR (<i>Alternate</i>)	
SHRI A. N. MOOKHERJEE	Indian Oxygen Limited, Calcutta
SHRI U. N. NAYAK	Auto & Aero Corporation (Private) Ltd, Bangalore
REPRESENTATIVE	Pressure Gauge Company, Bombay
SHRI A. N. SEN	Engineering Manufacturers Private Limited, Calcutta
SHRI B. KANTI GUHA THAKURTA (<i>Alternate</i>)	
SHRI B. SHANKARANARAYAN	Engineers India Limited, New Delhi
SHRI T. S. NAGESWARAN (<i>Alternate</i>)	
BRIG D. SWAROOP	Instrumentation Limited, Kota
SHRI K. R. BANERJEE (<i>Alternate</i>)	
SHRI S. VENKATARAMAN	Bestobell India Limited, Calcutta
SHRI S. VITTAL	Ministry of Defence [DGI (N)]
LT R. MIDHA (<i>Alternate</i>)	

Indian Standard

SPECIFICATION FOR TYRE PRESSURE GAUGES FOR AUTOMOBILES (POCKET TYPE)

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 17 May 1977, after the draft finalized by the Industrial Instruments Sectional Committee had been approved by the Mechanical Engineering Division Council.

0.2 In the preparation of this standard, assistance has been derived from the following:

JIS D 8201-1961 Tyre gauges for automobiles. Japanese Standards Association.

BS 4613 : Part I : 1970 Specification for tyre pressure gauges: Part I Indicating bar portable type. British Standards Institution.

0.3 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS:2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard covers the requirements for pocket type tyre pressure gauges for measurement of air pressure of tyres for automobiles.

2. UNIT OF PRESSURE

2.1 For the purpose of this standard, the unit of pressure shall be kilopascal (kPa).

NOTE — $100 \text{ kPa} = 1 \text{ bar} = 10^5 \text{ N/m}^2$.

$1 \text{ kgf/cm}^2 = 98.0665 \text{ kPa}$.

*Rules for rounding off numerical values (revised).

3. CLASSIFICATION

3.1 The tyre gauges shall be classified into two categories, namely, low pressure and high pressure with range of scale and minimum scale unit as given below:

<i>Classification</i>	<i>Range of Scale</i> kPa	<i>Minimum Scale Unit</i> kPa
Low pressure (LP)	50 to 400	10 with numerals at interval of 50 kPa
High pressure (HP)	50 to 1 000	20 with numerals at interval of 100 kPa

4. CONSTRUCTION

4.1 The construction of tyre pressure gauges shall be as given in Fig. 1.

4.2 Connector — The connector shall be suitable to fit on tyre valves having 7.7 V cap threads conforming to 'Indian Standard specification for tyre tube valves and accessories (*under preparation*)'. When applied to the valves stem, the connector shall depress the valve core plunger permitting the free passage of air from the tyre into the gauge pressure chamber, with no continuous loss of air or damage to the stem or core members. The connector shall be integral with the body or rigidly attached thereto so as not to become loose or detached.

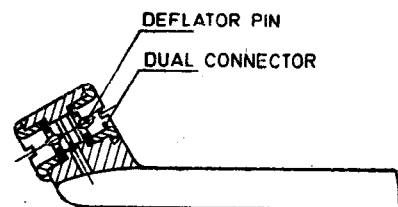
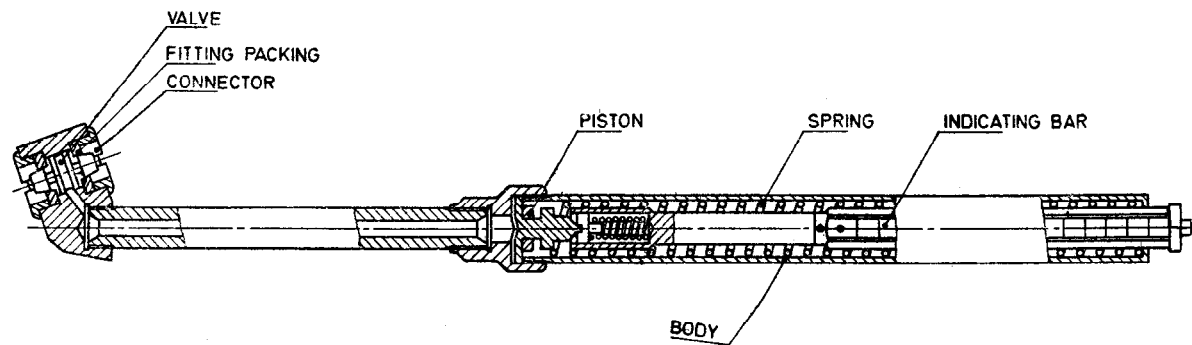
4.3 Dual Connector — The dual connector shall be provided with a dual opposed deflator pin and so constructed as to operate the gauge from one chuck, and render the other chuck deflator pin inoperative.

4.4 Body — The body shall fully shield the internal working mechanism when the indicating bar is in the closed position.

4.5 Indicating Bar — The connection between the indicating bar and the internal working mechanism shall be such as to permit the indicating bar to remain at the indicated pressure after the source of pressure has been removed. The graduation marks and figures shall be stamped or etched to be permanent and legible. The indicating bar shall protrude sufficiently beyond the maximum reading to show that the tyre pressure gauge is subjected to excessive pressure.

4.6 The design and construction of the gauge shall be such that rotation of the indicating bar does not alter the calibration.

4.7 Subject to agreement between the purchaser and the supplier, the gauges may be fitted with a pocket clip.



ALTERNATIVE TYPE, WITH DUAL CONNECTOR

All dimensions in millimetres.

FIG. 1 TYRE PRESSURE GAUGE

5. MATERIAL

5.1 The materials for main parts of gauges shall be as given in Table 1.

TABLE 1 MATERIALS FOR MAIN PARTS OF GAUGES

PART	MATERIAL	CONFORMING TO SPECIFICATION
(1)	(2)	(3)
Body	Brass	IS : 407-1966*
Connector	Brass	IS : 319-1974†
Deflator pin	Brass	IS : 319-1974†
Fitting packing	Oil-resisting rubber	—
Piston	Viton, Teflon, chrome tanned leather or equivalents	—
Spring	Steel	Grade 4, Section II to IS : 4454-1967‡
Valve	Brass	IS : 319-1974†

*Specification for brass tubes for general purposes (*second revision*).

†Specification for free-cutting brass bars, rods and sections (*third revision*).

‡Specification for steel wires for cold formed springs.

5.1.1 Indicating bar shall be of brass conforming to IS : 319-1974* or aluminium conforming to IS : 617-1959†. Aluminium alloy Grade A-12 is considered a suitable material.

6. DESIGNATION

6.1 The tyre gauges shall be designated by the class, pressure range and number of this standard.

Example:

A high pressure tyre gauge having a pressure range up to 1 000 kPa shall be designated as:

HP Tyre Gauge — 1 000 IS : 8457-1977

7. COATING

7.1 The components of pressure gauges which are made of steel shall be coated with non-corrosive chemicals or equivalent coatings. The brass components shall be coated with nickel and chromium in accordance with IS : 4827-1968‡.

*Specification for free-cutting brass bars, rods and sections (*third revision*).

†Specification for aluminium and aluminium alloy ingots and castings for general engineering purposes (*revised*).

‡Specification for electroplated coatings of nickel and chromium on copper and copper alloys.

8. VISUAL INSPECTION

8.1 The visual inspection of the surface of the tyre pressure gauge shall reveal no injurious defects, such as cracks, and unevenness. Also the scales shall be marked legibly and indelibly.

9. TESTS

9.1 Accuracy Test — This test is carried out with the help of an air accumulator which is able to regulate air pressure by an air compressor and pressure regulating valve. Accuracy shall be established against test gauge conforming to IS : 3624-1966*. The pressure shall be regulated to the maximum and at three suitable points of scale (one of the points being the most often used pressure and the other maximum pressure). The indicator error shall be read in the upward, downward and horizontal positions. The tyre pressure gauge shall meet the following requirements:

- a) The error indicated shall be within ± 1 scale division of value corresponding to the minimum scale unit given in **3.1**,
- b) The movement of indicator shall be smooth, and
- c) There shall be no air leakage at any part of the gauge.

9.2 Durability Test — The tyre pressure gauge shall be tested for 1 000 operations with six operations per minute speed under an air pressure of three-fourths of the maximum scale. The gauge shall meet all the requirements specified in **9.1** after this test.

9.3 Overload Test — The pressure gauge shall be subjected to 25 per cent overload pressure for 10 minutes continuously. The gauge shall then be subjected to the accuracy test and shall meet all the requirements given under **9.1**.

9.4 Shock Test — The gauge shall be capable of withstanding shock without damage when dropped freely from a height of one metre on to a concrete surface three times, once with the connector downwards and the bar extended, once with the connector upwards and the bar extended and once with the connector horizontal and the bar extended. The gauge shall be then subjected to the accuracy test given in **9.1** and shall meet the requirements accordingly.

9.5 Storage Test — The gauges shall be able to withstand without damage, storage in the temperature of -10 to 43°C . Following these exposures for sufficient duration and after being stabilized at a temperature of $27 \pm 2^{\circ}\text{C}$, the gauges shall be capable of meeting the requirements of the accuracy test as given in **9.1**.

*Specification for bourdon tube pressure and vacuum gauges.

10. MARKING

10.1 All markings, graduations and figures shall be clear and well defined.

10.2 The following particulars shall be permanently and legibly marked on gauges:

- a) Maximum value of pressure range with unit of pressure, namely, 'kPa';
- b) Manufacturer's name or recognized trade-mark, if any; and
- c) Serial number of the gauge.

10.2.1 The gauges may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

11. PACKING

11.1 Each gauge shall be packed in a wooden box, with adequate cushioning material to minimize movement of the gauge and to ensure that the gauge is capable of withstanding normal transit risks without damage. The packing shall be made in such a manner as to prevent the interior mechanism or the connector becoming exposed to contamination by foreign matter likely to affect the accuracy of the gauge.